SNAP TELESCOPE PROPERTIES

SNAP-TECH-06010
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23 August 2006

The following data have been abstracted from SNAP Controlled Document #00008 rev F "Optical Telescope Assembly Definitions and Requirements," #00028 rev C "Mission Definition and Requirements Document," #00203 rev A "SNAP OTA Interface Control Document," and others.

OPTOMECHANICAL PROPERTIES	
Aperture	> 1.9 meters
Central obstruction	< 20% by area
Focal length	22 +- 1 meters
Wavelength range	0.4 to 1.7 μm
Working field area	0.7 square degrees instrumented, >1.0 square degree optical
Working field symmetry	square or rectangular
Working field distortion	< 2% variation in magnification
Strehl ratio zero-G worst field point	0.35 at 0.633 μm 0.65 at 1.00 μm
Strehl ratio zero-G at average point	0.60 at 0.633 μm 0.80 at 1.00 μm
Wavefront Error, zero G:	< 100 nm RMS any point in science field < 70 nm RMS average over all pixels
Wavefront Error, 1 G, horizontal axis	TBD
Wavefront Error, 1 G, vertical axis	TBD
Rate of change of PSF whisker in expected on-orbit environment:	< 2.0 milli-arcseconds/hour [TBC] See Sholl et al 2005; cannot be verified prelaunch by test, only by analysis.
Optical Throughput	> 60% from 0.4 to 1.0 μm > 90% from 1.0 to 1.8 μm
Emissivity	Irradiance at focal plane shall not exceed 10% of 300K blackbody at 1.7μm
Stray Light:	Shall not exceed 10% of zodi when aimed anywhere within 20 degrees of the North Ecliptic Pole.
Stray Heat:	Exit pupil shall be a real pupil not virtual. Complete cold stop for detector shall not obstruct the aperture.

MISSION RELATED PROPERTIES AND CONSTRAINTS	
Solar avoidance	axis > 70 degrees from Sun
Focussing	6 d.o.f. adjustment at secondary mirror
Telescope length	< 4 meters [TBC]
Telescope diameter	< 2.5 meters [TBC]
Telescope mass	< 600 kg includes cold stop conical shield per Telescope Interface Control Document
Attachment to observatory	semi-kinematic mounts
Electrical power	< 130 watts (average)
Launch peak acceleration	+11, -3 G vertical ±5 G lateral
Lowest resonance frequency	> 25 Hz [TBC]
Thermal control stability	< 0.1 degC/hour [TBC]

RELATED PAYLOAD ELEMENTS These elements are critical with regard to telescope stray light, stray heat, thermal environment, etc but are not grouped within Telescope category for purposes of constraining length, diameter, mass.
Outer baffle
Deployable front cover
Aft light shield
Cassegrain shutter